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July 8, 1998

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**HAND DELIVERED**

Magalie R. Salas, Esquire  
Secretary  
Federal Communications Commission  
1919 M Street, NW, Room 222  
Washington, D.C. 20554

Re: 1998 Biennial Regulatory Review —  
Amendment of Part 18 of the Commission's Rules to  
Update Regulations for RF Lighting Devices  
**ET Docket No. 98-42**

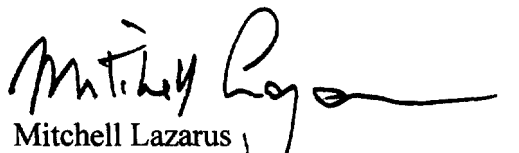
Dear Ms. Salas:

On behalf of Symbol Technologies, Inc., enclosed please find the original and nine copies of  
Comments of Symbol Technologies, Inc., in the above-referenced proceeding.

Please date stamp and return the enclosed extra copy.

If there are questions regarding this matter, please contact the undersigned directly.

Respectfully submitted,

  
Mitchell Lazarus  
Counsel for Symbol Technologies, Inc.

ML:deb

Enclosures

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Before the  
**Federal Communications Commission**  
Washington DC 20554

JUL - 8 1998

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )  
 )  
1998 Biennial Regulatory Review — ) ET Docket No. 98-42  
Amendment of Part 18 of the )  
Commission's Rules to Update )  
Regulations for RF Lighting Devices )

**COMMENTS OF  
SYMBOL TECHNOLOGIES, INC.**

Symbol Technologies, Inc. (Symbol), a major manufacturer of commercial Part 15 equipment, hereby submits these Comments in the above-captioned proceeding.<sup>1</sup>

The Notice addresses two devices: an electrodeless fluorescent lamp at 2.2-2.8 MHz, and microwave lighting at 2400-2450 MHz. Symbol expresses no views on the former. These Comments concern only RF lighting equipment in the 2.4 GHz ISM band.

**THE COMMISSION SHOULD PROTECT PART 15 OPERATIONS.**

The Notice proposes to allow RF lighting equipment to operate free of any radiated emissions limits in the 2.4 GHz ISM band.<sup>2</sup> In evaluating possible adverse effects, the Commission does not consider — or even mention — the very large number of Part 15 devices currently functioning in the band. For the reasons given below, the Commission should impose

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<sup>1</sup> Regulations for RF Lighting Devices, ET Docket No. 98-42, Notice of Proposed Rule Making, FCC 98-53 (released April 9, 1998) (Notice).

<sup>2</sup> Notice at ¶ 13.

limits on 2.4 GHz RF lighting equipment to protect Part 15 operations, and should specify appropriate measurement procedures.

**A. The Commission Has Recognized the Importance of Part 15 Communications.**

Part 15 devices have become a major component of the Nation's telecommunications infrastructure. Not only are Part 15 devices an important industry in their own right, but they contribute to the success and global competitiveness of many other industries, including manufacturing, retail, transportation, health care, government (including public safety and law enforcement), education, energy, communications, finance — indeed, to virtually every sector of the economy. Part 15 also helps to further the Commission's long-term goals by conserving licensed spectrum for longer-range communications.

The Commission declined to adopt new rules for the 2402-2417 MHz sub-band in 1995 because it decided that Part 15 operations are too important to tamper with. The Commission explained:

These Part 15 devices [in the 2400-2483.5 MHz band] provide a variety of consumer and business oriented services that benefit individuals, commercial services, and private spectrum users, and they also have applications for public safety and medical needs. Benefits include lower costs of energy through automatic meter reading and optimized power generation, low-cost broadband access to Internet services and other information networks for schools, libraries, telecommuters and home offices, mobility of telephonic and computer communications within offices and homes without extensive reconstruction and wiring, immediately installable video conferencing among and between buildings for educational instruction, health care monitoring and judicial procedures without construction of special studio facilities, safe transport of chemicals and petroleum products through low-cost and easily deployable pipeline monitoring services, and control for potentially tens of thousands of traffic

lights, at less than one-third the cost of wireline solutions, to ease road congestion, and significantly reduce pollution and new street construction.<sup>3</sup>

This passage is more than three years old. A list of commercial and consumer activities supported by 2.4 GHz Part 15 equipment today would be several times longer, and the quantities of equipment in use have expanded many times over since then.

**B. Section 15.5 Does Not Bar Protecting Part 15 from ISM.**

Section 15.5(b) of the Rules on its face requires a Part 15 operator to accept interference from any other user of the band, including ISM.<sup>4</sup> But that does not prevent the Commission from amending Part 18, as requested here.

Moreover, the Commission has previously interpreted Section 15.5 to ensure that Part 15 can continue to operate successfully in the presence of other services. In 1995, two weeks before promulgating the passage quoted above, the Commission made a landmark decision concerning the relationship between Part 15 and other services sharing the same spectrum. The Commission was considering an allocation of the 902-928 MHz ISM band for a new Location and Monitoring Service (LMS). But the band was already home to a large population of Part 15 communications equipment. The parties agreed that Part 15 was likely to interfere with some types of LMS. And

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<sup>3</sup> Allocation of Spectrum Below 5 GHz, 10 FCC Rcd 4769, 4786 (1995).

<sup>4</sup> The rule provides: "Operation of an intentional, unintentional, or incidental radiator is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator." 47 C.F.R. § 15.5(b).

a strict reading of Section 15.5 would have required a Part 15 operator to shut down if it interfered with an LMS provider.<sup>5</sup>

The Commission wisely avoided this result, and the great disruption it would have caused. The Commission acknowledged that

Part 15 devices currently operating in the 902-928 MHz band provide valuable services such as automated meter reading, inventory control, package tracking and shipping control, alarm services, local area networks, and cordless telephones. These devices allow businesses to operate more effectively and efficiently, without the regulatory complexities of many licensed services.<sup>6</sup>

The Commission affirmed the secondary status of Part 15 relative to LMS, but at the same time it established a “safe harbor”: If a Part 15 operator kept its power and antenna characteristics within certain constraints, it would be deemed not to cause harmful interference to LMS, and so could not be required to cease operations to protect LMS.<sup>7</sup> This creative solution recognized the importance of Part 15 while still giving adequate protection to co-users of the band.

The present situation is not identical to the LMS proceeding — this proposal invokes the “interference must be accepted” clause of Section 15.5(b), rather than the “no harmful interference is caused” clause. But the balance of interests to be protected is similar. The Commission should again take appropriate steps to provide for the continued operation of Part 15 devices, while encouraging the development of other technologies in the same spectrum.

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<sup>5</sup> “The operator of a radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.” 47 C.F.R. § 15.5(c).

<sup>6</sup> Automatic Vehicle Monitoring Systems, 10 FCC Rcd 4695, 4714 (1995).

<sup>7</sup> 47 C.F.R. § 90.361.

Here, the Commission need not carve out another exception to Section 15.5. Rather, it need only add a line to the table in Section 18.305(c) that sets reasonable limits on field strength limits for RF lighting devices in the Part 15 bands above 1 GHz.

**C. The Commission Should Impose In-Band Emissions Limits on RF Lighting Devices, and Should Specify Measurement Procedures.**

Symbol supports the numerical in-band limits proposed by the Part 15 Coalition:

100  $\mu\text{V/m}$  at 30 meters for non-consumer equipment, and 50  $\mu\text{V/m}$  for consumer equipment.

These values are equivalent to the out-of-band limits proposed by the Commission, and are the same limits that apply to Part 15 Class A and B digital equipment, respectively.

Symbol also supports the IEEE proposal for measurement procedures applicable to RF lighting equipment. Specifically, in addition to the maximum average emissions listed above, RF lighting equipment should be held to a peak envelope limit of 20 dB above the applicable average limit, as measured with a 1 MHz resolution bandwidth and a 1 to 2 MHz video bandwidth spectrum analyzer.

Symbol suggests the following changes to the language of the rule. (New material is double-underlined.)

First, Section 18.305(a) should be changed to read as follows.

(a) ISM equipment operating on a frequency specified in § 18.301 is permitted unlimited radiated energy in the band specified for that frequency unless otherwise provided.

Second, the following text should be added under the table in proposed Section 18.305(c):

These limits apply at all frequencies above 1 GHz, including within the bands listed in Section 18.301.

Third, further text should be added to Section 18.305(c) specifying the measurement procedures outlined above.

### **CONCLUSION**

Great numbers of Part 15 devices are deployed in the 2.4 GHz band, in reliance on the current Part 18 environment. Those devices are an important element of the machinery that powers the U.S. economy. Their operation is essential to the continued efficient functioning of many industries and economic sectors.

Symbol supports the Commission's goal of facilitating the development of energy-efficient lighting technology with RF lighting products at 2.4 GHz. In setting rules for these products, however, the Commission should impose realistic field strength limits in the bands allocated for Part 15 spread spectrum and other communications, and should specify appropriate measurement procedures.

Respectfully submitted,

SYMBOL TECHNOLOGIES, INC.

  
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July 8, 1998